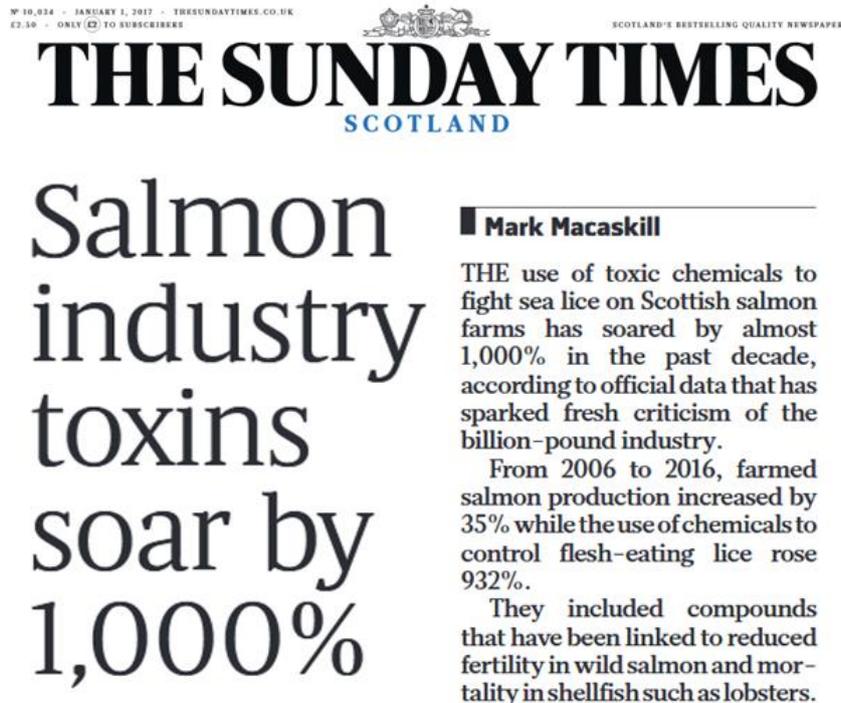


Media Backgrounder: Chemically Embalmed Scottish Salmon (December 2019)

In 2017, the [front page of The Sunday Times Scotland revealed](#) that the use of toxic chemicals including Azamethiphos, Deltamethrin and Emamectin benzoate on Scottish salmon farms had increased ten-fold over the last decade.



№ 10,024 - JANUARY 1, 2017 - THE SUNDAY TIMES.CO.UK
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THE SUNDAY TIMES

SCOTLAND

Salmon industry toxins soar by 1,000%

Mark Macaskill

THE use of toxic chemicals to fight sea lice on Scottish salmon farms has soared by almost 1,000% in the past decade, according to official data that has sparked fresh criticism of the billion-pound industry.

From 2006 to 2016, farmed salmon production increased by 35% while the use of chemicals to control flesh-eating lice rose 932%.

They included compounds that have been linked to reduced fertility in wild salmon and mortality in shellfish such as lobsters.

However, the [data published by the Scottish Environment Protection Agency](#) does not include the [huge increases in the use of Hydrogen Peroxide](#) or the use of Azamethiphos and Deltamethrin in well boats servicing salmon farms (and discharging untreated chemicals wastes in the vicinity of salmon farms). Data on chemical use in well boats for 2018 and 2019 is still not available via SEPA's '[Scottish Pollutant Release Inventory](#)' (read more via [\[5\]](#)).

Scotland's aquaculture

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Water Type Local Authority Sealice Treatment Used

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NB This dataset does not include treatments carried out on wellboats. The full annual SPRI data returns inclusive of wellboat information can be found [here](#)

Read more via: [Scottish Salmon's Lethal Legacy - Ten-fold Increase in Toxic Chemical Use in Ten Years](#)

In October 2018, Scottish Salmon Watch published a [Media Backgrounder: All is Not Well With Sick Scottish Salmon](#) detailing the unreported use of toxic chemicals via well boats - including:

Media Backgrounder (October 2018):

All is Not Well With Sick Scottish Salmon

- **Unreported Use of Toxic Chemicals Via Wellboats Slips Net**
- **Lethal Plumes of Poison Flooding Scottish Lochs**
- **New Scientific Paper Raises Serious Concerns**
- **Norway proposes a ban on toxic chemical use on salmon farms**
- **SEPA now reviewing toxicity of Azamethiphos & Hydrogen Peroxide (???)**



Summary:

The use of toxic chemicals via wellboats to treat lice-infested Scottish salmon is slipping through the net. According to SEPA, [Scotland's Aquaculture database](#) does NOT record the use of Azamethiphos and Deltamethrin via wellboats and does NOT record use of Hydrogen Peroxide at all.

Data on the use of Azamethiphos and Deltamethrin is recorded via [SEPA's Scottish Pollutant Release Inventory](#) but is not available for 2017 and 2018 (Hydrogen Peroxide use is not recorded at all).

FOI documents obtained from the Scottish Government and SEPA reveal that reporting on the use of toxic chemicals via wellboats is haphazard, at extremely short notice and in some cases (e.g. Scottish Sea Farms in Loch Nevis in December 2016) reporting takes place after the use of toxic chemicals (i.e. breach of the licence).

Data suggests an explosion in the use of Azamethiphos, Deltamethrin and Hydrogen Peroxide via wellboats (although the data sets available make it impossible to calculate annual use figures).

Data [disclosed by the Scottish Government in June 2018](#) reveals that dozens of wellboats - mostly registered in Norway but some in Chile and Canada - are now licensed by Marine Scotland until as far away as 2021 to discharge toxic chemicals from over 100 salmon farms around Scotland.

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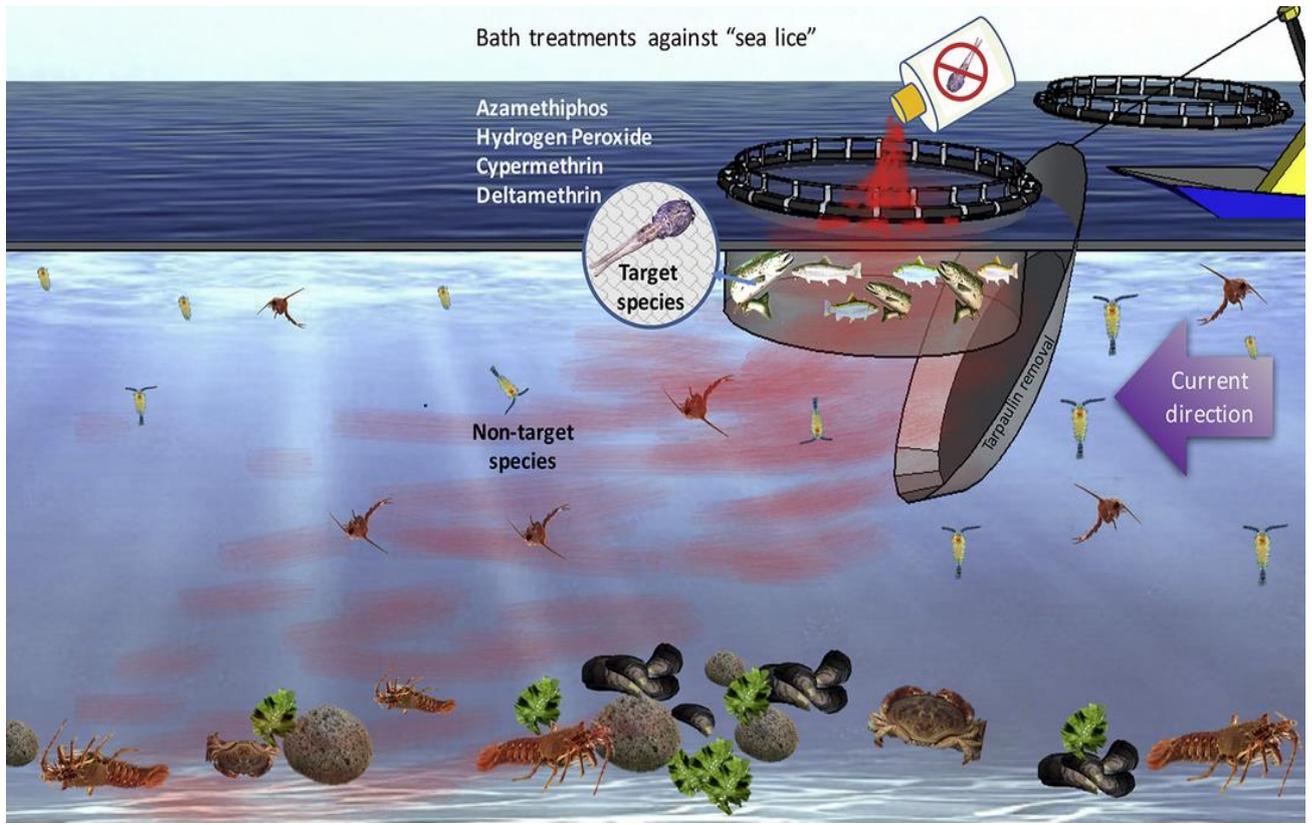
A new scientific paper [published in the February 2019 issue of *Science of the Total Environment*](#) concludes that the use of Azamethiphos, Cypermethrin, Deltamethrin and Hydrogen Peroxide "have detrimental effects on non-target species".

In September 2018, the Norwegian Government's Ministry of Food & Fisheries [proposed a ban](#) on the use of toxic chemicals via tarpaulins. "The move follows surprising and controversial early findings in one scientific study that hydrogen peroxide, regarded as the least environmentally harmful of the chemicals used to kill sea lice, can damage shrimp stocks," [reported](#) Fish Farming Expert (25 September 2018).

Norwegian research presented in March 2018 on "[Environmental effects of chemicals used against sea lice](#)" reported [significantly increased mortality of shrimp](#) by both Deltamethrin and Hydrogen Peroxide.

In August 2016, a [report published by the Scottish Aquaculture Research Forum](#) revealed that the use of Emamectin benzoate (SLICE) was [lethal to lobsters](#). However, SEPA [dropped a proposal](#) to ban the use of Emamectin [following lobbying by the Scottish salmon farming industry](#), the [chemical company Merck](#) and the [Scottish Government](#) (read more [online here](#) and via "[Slicegate: Anatomy & Chronology of an Environmental Lobotomy](#)").

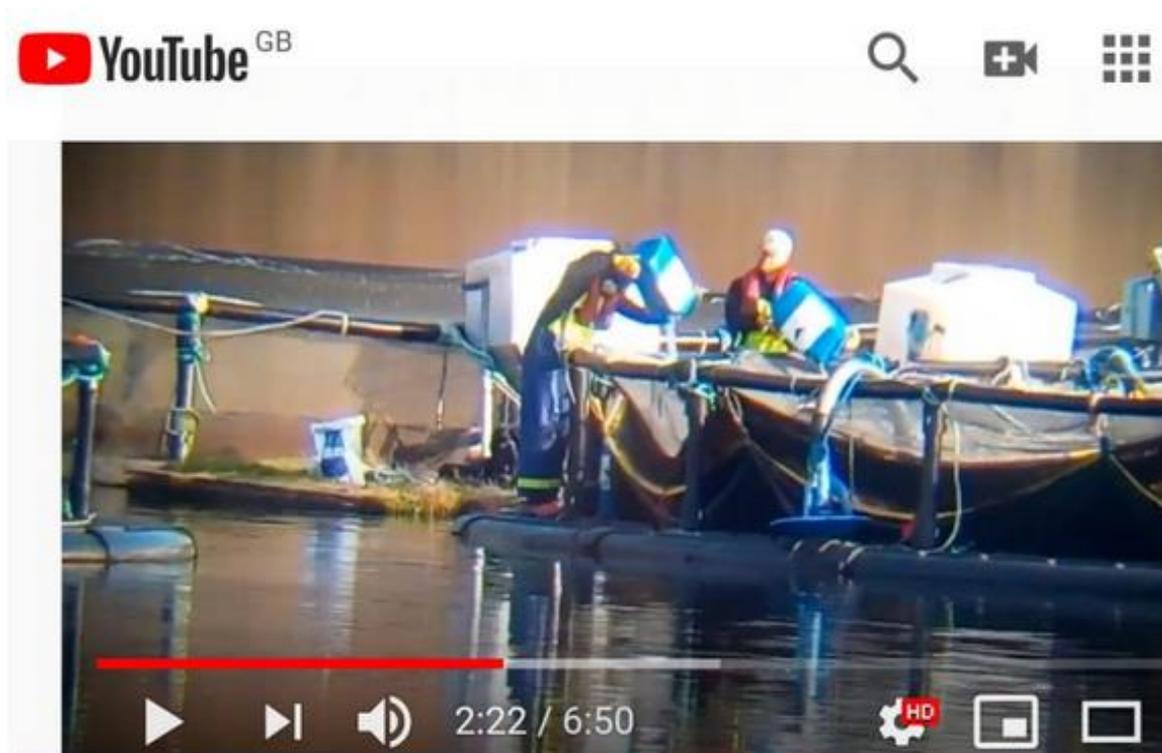
Read more via "[Effects of pharmaceuticals used to treat salmon lice on non-target species: Evidence from a systematic review](#)"



In July 2019, The Sunday Times [exposed the use of the carcinogenic chemical Formalin \(Formaldehyde\) by salmon farms in Scotland](#). Scottish Salmon Watch obtained video footage of vats of chemicals - for both [Formaldehyde](#) and Hydrogen Peroxide.



In November 2019, video footage of a salmon farmer wearing a gas mask using Formaldehyde in Loch Tralaig was [published by Scottish Salmon Watch](#).



In [2017](#), [2018](#) and [2019](#), Rob Edwards revealed in [a series of articles published in The Sunday Herald](#) and [The Ferret](#) how [salmon farmers](#), [the chemical giant Merck](#) and the [Scottish Government](#) had fought off a ban on the [lobster-killing chemical Emamectin benzoate](#) in a scandal dubbed '[Slicegate](#)'.

How the Scottish Government 'nuanced' away fish farm pesticide ban



The Scottish Government put pressure on its environmental watchdog to drop a plan to ban a toxic pesticide so as not to upset the fish farming industry.

 The Ferret

In May 2019, [BBC Panorama reported](#) that Mowi (formerly Marine Harvest) was "one of a number of firms under investigation for possible misreporting of chemical use".

In 2013, [The Guardian](#) and [The Sunday Herald](#) revealed how toxic chemicals used by salmon farms were contaminating the sea-bed. In 2017, The Sunday Herald followed up with a [front-page news story](#) on how 45 lochs across Scotland had been contaminated with toxic chemicals used by salmon farms.

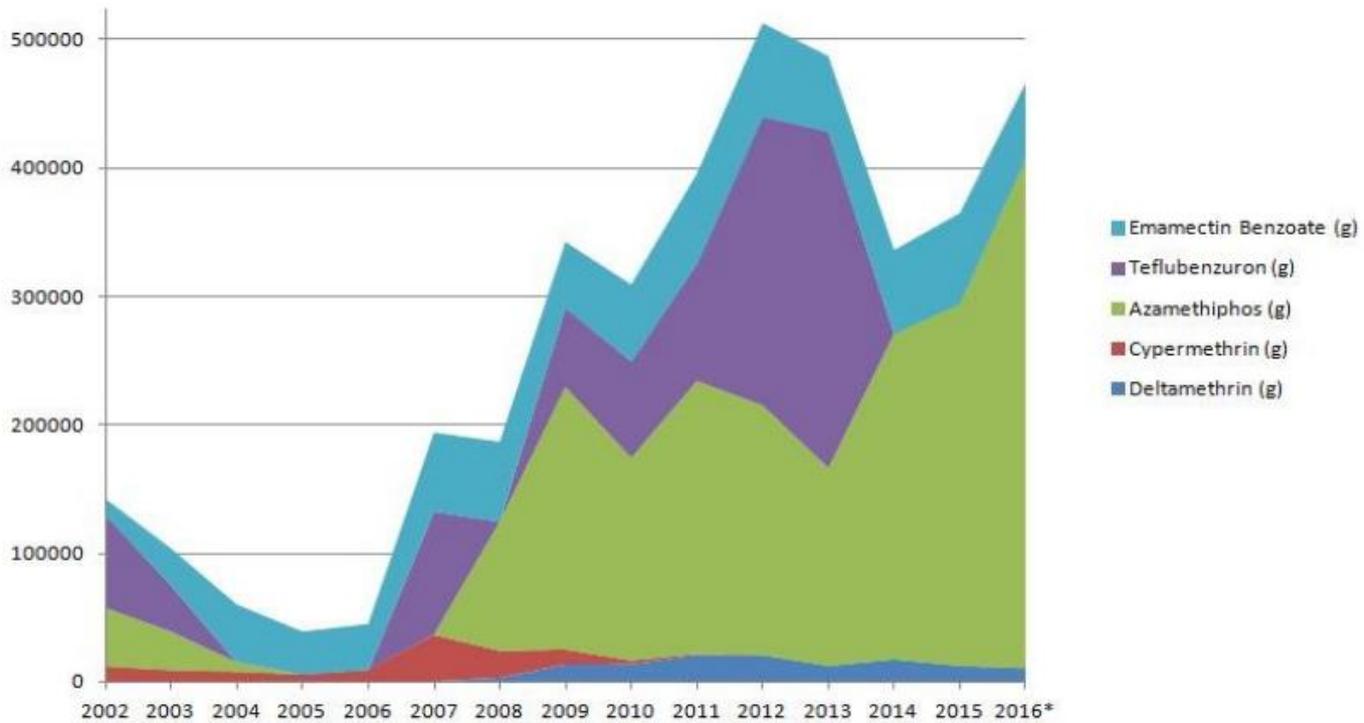


In 2009, [Rob Edwards revealed](#) that Marine Harvest ([re-named Mowi in 2019 due to negative consumer perception in the name Marine Harvest](#)) apologised for offering to reward officials at Scotland's environment watchdog with smoked salmon for giving the go-ahead for a new toxic pesticide (Deltamethrin) in record time.

In 1996, a [secret trial of the toxic chemical Teflubenzuron was carried out on the Isle of Skye](#) leading to the deaths of lobsters. In 2015, Teflubenzuron was finally "[withdrawn from the market after scientists found that that it can leak into lochs and kill crabs, shrimps and lobsters](#)".

Data on the use of Azamethiphos, Cypermethrin, Deltamethrin, Emamectin benzoate and Teflubenzuron ([withdrawn from the market in 2015 after scientists found that that it can leak into lochs and kill crabs, shrimps and lobsters](#)) on salmon farms ([excluding the use on well](#)

boats) since 2002 is [available to download as an Excel spreadsheet via 'Scotland's Aquaculture' web-site.](#)



The public can [search the Scotland's Aquaculture database by company, chemical and site.](#) For example, here's the largest reported uses (in grams) of Deltamethrin (excluding use via wellboats) in 2019 (data up to September):

Year	Deltamethrin	Site Name	Operator
01-Mar-19	480	Port na Moine Site 2 (North)	Mowi Scotland Ltd
01-Aug-19	240	Colonsay	Mowi Scotland Ltd
01-Jul-19	180	Isle of Rum	Mowi Scotland Ltd
01-Aug-19	150	Isle of Rum	Mowi Scotland Ltd
01-May-19	150	Port na Moine Site 2 (North)	Mowi Scotland Ltd
01-Mar-19	135	Erisort, North Shore East	Mowi Scotland Ltd
01-Jul-19	130	Port na Moine Site 2 (North)	Mowi Scotland Ltd
01-Jun-19	122.5	Portnalong	Mowi Scotland Ltd
01-Mar-19	122.5	Portnalong	Mowi Scotland Ltd
01-Jul-19	120	Colonsay	Mowi Scotland Ltd
01-Jul-19	120	Seaforth	Mowi Scotland Ltd
01-Mar-19	105	Isle of Rum	Mowi Scotland Ltd
01-Aug-19	100	Am Maol, Isle of Muck	Mowi Scotland Ltd
01-Aug-19	93.6	Noster	Mowi Scotland Ltd
01-Jan-19	90	Isle of Rum	Mowi Scotland Ltd
01-Apr-19	87.5	Am Maol, Isle of Muck	Mowi Scotland Ltd
01-Jun-19	75	Am Maol, Isle of Muck	Mowi Scotland Ltd
01-Mar-19	75	Erisort, North Shore West	Mowi Scotland Ltd
01-Sep-19	65	Greanamul	The Scottish Salmon Company Ltd
01-Mar-19	62.5	Caolas a Deas East	Mowi Scotland Ltd

Here's the largest reported uses (in grams) of Azamethiphos (excluding use via wellboats) in 2019 (data up to September):

Year	Azamethiphos	Site Name	Operator
01-Apr-19	6060.000092	MacLeans Nose	Mowi Scotland Ltd
01-Jun-19	5509.99985	Groatay	Mowi Scotland Ltd
01-Aug-19	4800.000072	Creag an Sagairt West	Mowi Scotland Ltd
01-Sep-19	4790.000066	Creag an Sagairt West	Mowi Scotland Ltd
01-Jul-19	4400.000066	Ardintoul	Mowi Scotland Ltd
01-May-19	4239.99992	Ardintoul	Mowi Scotland Ltd
01-Feb-19	4000	MacLeans Nose	Mowi Scotland Ltd
01-May-19	3600.000054	Port na Cro	Mowi Scotland Ltd
01-Jun-19	3450.000125	Duich	Mowi Scotland Ltd
01-Aug-19	3150.000095	Ardintoul	Mowi Scotland Ltd
01-Jul-19	3150	West of Burwick	Grieg Seafood Shetland Ltd
01-Feb-19	3150	West of Burwick	Grieg Seafood Shetland Ltd
01-Jan-19	3150	West of Burwick	Grieg Seafood Shetland Ltd
01-Jun-19	3119.99993	Tabhaigh	Mowi Scotland Ltd
01-May-19	3079.999986	Sron	Mowi Scotland Ltd
01-Jun-19	3079.999983	Sron	Mowi Scotland Ltd
01-Mar-19	3000	Bastaness	Cooke Aquaculture Scotland
01-Jun-19	2899.999917	Grey Horse Channel	Mowi Scotland Ltd
01-May-19	2760	MacLeans Nose	Mowi Scotland Ltd
01-Apr-19	2750	Poll na Gille	Mowi Scotland Ltd

For example, here's the largest reported uses (in grams) of Emamectin benzoate (excluding use via wellboats) in 2019 (data up to September):

Year	Emamectin Benzoate	Site Name	Operator
01-Jun-19	795	Bagh Dail nan Ceann North an	Mowi Scotland Ltd
01-May-19	734.72	Flaeshins	Cooke Aquaculture Scotland
01-Sep-19	620.74	Loch Portree (Torvaig)	The Scottish Salmon Company Ltd
01-Jun-19	614.4	Poll na Gille	Mowi Scotland Ltd
01-Jul-19	610.16	Gravir Outer	The Scottish Salmon Company Ltd
01-Aug-19	582.4	Stead of Aithness	Cooke Aquaculture Scotland
01-May-19	546.092	Tabhaigh	Mowi Scotland Ltd
01-May-19	524.4	Gometra	The Scottish Salmon Company Ltd
01-Jan-19	522.2	Creran A	Scottish Sea Farms Ltd
01-May-19	514.3	Geasgill	The Scottish Salmon Company Ltd
01-Jul-19	498.48	Loch Portree (Torvaig)	The Scottish Salmon Company Ltd
01-Jun-19	478.4	Rubh an Trilleachain	Kames Fish Farming Ltd
01-Jul-19	468.6	Druimyeon Bay	The Scottish Salmon Company Ltd
01-Jun-19	441	MacLeans Nose	Mowi Scotland Ltd
01-Sep-19	436.8	Ness of Copister	Cooke Aquaculture Scotland
01-Sep-19	434	Kishorn Outer, Offshore of Ai	Scottish Sea Farms Ltd
01-Apr-19	434	Druimyeon Bay	The Scottish Salmon Company Ltd
01-May-19	412.5	Gravir Outer	The Scottish Salmon Company Ltd
01-Mar-19	410	Gometra	The Scottish Salmon Company Ltd
01-May-19	408.8592	Erisort, North Shore East	Mowi Scotland Ltd

Here's the top twenty reported uses of Deltamethrin (in grams) since 2002 - with Mowi's salmon farm at Port na Moine leading the way in March 2019:

Year	Deltamethrin	Site Name	Operator
01-Mar-19	480	Port na Moine Site 2 (North)	Mowi Scotland Ltd
01-Jul-14	400	Vuia Beag	The Scottish Salmon Company Ltd
01-Aug-11	385	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Feb-15	357.5	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Jul-14	337.5	Kyles Vuia East	The Scottish Salmon Company Ltd
01-Sep-11	332.5	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Jul-14	312.5	Taranaish	The Scottish Salmon Company Ltd
01-Jul-14	287.5	Vacasay, Roag	The Scottish Salmon Company Ltd
01-Oct-15	285	Poll na Gille	Mowi Scotland Ltd
01-Sep-12	280	Vuia Beag	The Scottish Salmon Company Ltd
01-Oct-13	275	Cairidh	Mowi Scotland Ltd
01-Mar-16	270	Sron	Mowi Scotland Ltd
01-Aug-12	270	Vuia Beag	The Scottish Salmon Company Ltd
01-Jul-15	262.5	Hellisay	Mowi Scotland Ltd
01-Apr-15	262.5	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Sep-18	255	Isle of Rum	Mowi Scotland Ltd
01-Jun-15	255	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Mar-15	255	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Dec-15	250	Gravir Outer	The Scottish Salmon Company Ltd
01-Nov-15	250	Rubh an Trilleachain	Kames Fish Farming Ltd

Here's the top twenty reported uses of Azamethiphos (in grams) since 2002 - with [Mowi's salmon farm at Ardintoul in Loch Alsh Special Area of Conservation](#) heading the list in December 2015:

Year	Azamethiphos	Site Name	Operator
01-Dec-15	13649.99952	Ardintoul	Mowi Scotland Ltd
01-Sep-16	10329.99983	Soay Sound	Mowi Scotland Ltd
01-Jun-14	7600	Gousam	The Scottish Salmon Company Ltd
01-Feb-15	7349.999875	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Jul-08	7200	Brei Geo Offshore	Scottish Sea Farms Ltd
01-Dec-10	7000	Burrastow	Cooke Aquaculture Scotland
01-Nov-16	6949.999893	Soay Sound	Mowi Scotland Ltd
01-Sep-08	6674.5	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Dec-16	6400.000244	Gorsten	Mowi Scotland Ltd
01-Sep-16	6340.000063	Carradale (North)	Mowi Scotland Ltd
01-Jan-16	6174.999774	Ardintoul	Mowi Scotland Ltd
01-Apr-19	6060.000092	MacLeans Nose	Mowi Scotland Ltd
01-Jun-15	5949.999899	Camas an Leim (Torridon)	Mowi Scotland Ltd
01-Jul-11	5920	Papa, East Head of Scalloway	Grieg Seafood Shetland Ltd
01-Jun-16	5850	Ardintoul	Mowi Scotland Ltd
01-Aug-16	5800	Vuia Mor South	The Scottish Salmon Company Ltd
01-May-17	5720	West of Burwick	Grieg Seafood Shetland Ltd
01-Oct-16	5719.999909	Soay Sound	Mowi Scotland Ltd
01-Oct-14	5700	Seaforth	Mowi Scotland Ltd
01-Jun-19	5509.99985	Groatay	Mowi Scotland Ltd

Data on the use of Hydrogen Peroxide was published via FOI by SEPA in November 2019 ([F0191054](#)). Here's the top 20 biggest uses of Hydrogen Peroxide (excluding use in wellboats) during 2018:

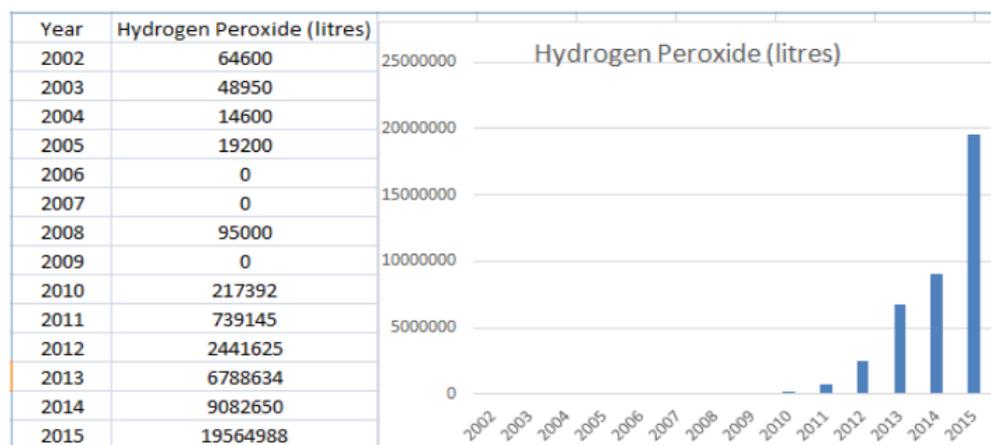
Year	Site Name	Operator (at date of submission)	Hydrogen Peroxide (litres)
2018	Marulaig Bay	Marine Harvest (Scotland) Ltd	613000
2018	Groatay	Marine Harvest (Scotland) Ltd	175410
2018	Grey Horse Channel	Marine Harvest (Scotland) Ltd	151050
2018	Uiskevagh North	The Scottish Salmon Company Ltd	137974
2018	Stulaigh Island	Marine Harvest (Scotland) Ltd	132250
2018	Skipport Outer (Ornish)	Marine Harvest (Scotland) Ltd	114368
2018	West of Burwick	Grieg Seafood Shetland Ltd	111600
2018	Taranaish	The Scottish Salmon Company Ltd	106176
2018	Maragay Mor	The Scottish Salmon Company Ltd	105234
2018	Hellisay	Marine Harvest (Scotland) Ltd	104815
2018	Flaeshins	Cooke Aquaculture Scotland	91789
2018	Aird Ardheslaig	The Scottish Salmon Company Ltd	91000
2018	Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	85777.5
2018	Petersport North	The Scottish Salmon Company Ltd	85673
2018	Maol Ban	Marine Harvest (Scotland) Ltd	81948.5
2018	Cairidh	Marine Harvest (Scotland) Ltd	81885
2018	Vuia Mor	The Scottish Salmon Company Ltd	79800
2018	East of Langa	Grieg Seafood Shetland Ltd	78912
2018	Setterness North	Grieg Seafood Shetland Ltd	78360
2018	Bagh Dail nan Ceann	Marine Harvest (Scotland) Ltd	75830

Data on Hydrogen Peroxide use from 2002 to 2015 was [published by the Global Alliance Against Industrial Aquaculture in 2017](#).

**Sky-Rocketing Chemical Use on Scottish Salmon Farms
- Hydrogen Peroxide use leaps from 19,000 litres in 2005 to 19m litres in 2015**

Explosive new data from the Scottish Environment Protection Agency (SEPA) reveals a staggering increase in the use of a "corrosive" chemical on Scottish salmon farms. Data obtained by the Global Alliance Against Industrial Aquaculture (GAAIA) via Freedom of Information (FOI) reveals that the use of [Hydrogen Peroxide](#) shot up from 19,200 litres in 2005 to 19.6 million litres in 2015 (an increase of 101,801%) as chemical resistance cripples the Scottish salmon farming industry [1].

Read more via today's Sunday Times: "[Record chemical use 'of concern' to salmon giant](#)" [2]



Read more via "[Sky-Rocketing Chemical Use on Scottish Salmon Farms - Hydrogen Peroxide use leaps from 19,000 litres in 2005 to 19m litres in 2015](#)"